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JAPANESE PATENT OFFICE

PATENT ABSTRACTS OF JAPAN

(11) Publication number: **52139680 A**

(43) Date of publication of application: **21.11.77**

(51) Int. Cl.

**C09K 3/16**  
**C08J 7/12**

(21) Application number: **51056887**

(22) Date of filing: **17.05.76**

(71) Applicant:

**MATSUSHITA ELECTRIC IND CO LTD**

(72) Inventor:

**KOMENO HIROSHI**  
**KONDO SHIGERU**  
**INAMI AKIRA**

**(54) ANTISTATIC AGENT**

**(57) Abstract:**

PURPOSE: A durable antistatic agent with excellent

water-and humidity resistance comprising dialkyldimethylammonium chlorides, dimethylpolysiloxane, and water.

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**B32B 27/28**

**B32B 27/36**

(21) Application number: 09360007

(22) Date of filing: 26.12.97

(71) Applicant: TEIJIN LTD

(72) Inventor: KOYAMA TOSHIYA

(54) ANTISTATIC RELEASE FILM

(57) Abstract:

PROBLEM TO BE SOLVED: To prevent troubles caused by static electricity and develop excellent release characteristics by providing a release layer, where a coating liquid containing a block copolymer composed of a specified azo compound, a specified acrylic compound, or the like is applied, on at least one side of a polyester film.

SOLUTION: A polyester film is used for a base film. A block copolymer, comprising an azo compound having a polysiloxane segment, an acrylic compound having a

quaternary ammonium base, and an acrylic compound without a quaternary ammonium base, is formed for applying on at least one side thereof. A liquid containing the block copolymer is applied, and heated and dried for forming a release layer. A metacrylic acid methyl without a quaternary ammonium base or the like, and a compound formed by binding a substituent containing a quaternary ammonium base to the metacrylic acid methyl without a quaternary ammonium base or the like are used for the acrylic compound. Thereby, stable antistatic properties and excellent release characteristics can be obtained.

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**C09D 5/00****C08J 7/04****C09D183/08****C09D185/00**

(21) Application number: 06307463

(22) Date of filing: 12.12.94

(30) Priority: 10.12.93 JP 05310311  
15.03.94 JP 06 43936

(71) Applicant: SEKISUI CHEM CO LTD

(72) Inventor: ASUKA MASAHIRO  
NAKATANI YASUHIRO  
MIYAZAKI MIYUKI  
MIYAMOTO KAZUAKI

## (54) ANTISTATIC COATING COMPOSITION

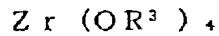
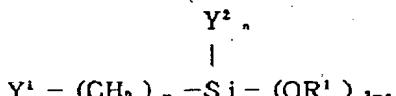
## (57) Abstract:

**PURPOSE:** To obtain the composition which can provide a coating film which is transparent and improved in antistatic properties, hardness, friction resistance, etc., by mixing a specified aminoalkylalkoxysilane compound with a specified silane compound, a specified acid, an organic solvent, water and a specified metal alkoxide compound.

**CONSTITUTION:** This composition is obtained by mixing an aminoalkylalkoxysilane compound represented by formula I (wherein Y<sup>1</sup> is an organic amine group; Y<sup>2</sup> is a hydrocarbon group; R<sup>1</sup> is 1-5C alkyl; m is 1-5; and n is 0-2) with a silane compound represented by formula II (wherein Y<sup>3</sup> is an organic group; R<sup>2</sup> is R<sup>1</sup>; and p is 0-3), an acid (salt) having -log Ka (the logarithm of the reciprocal of the dissociation constant (Ka) in a 0.1mol/dm<sup>3</sup> concentration) of 3.5 or below, an organic solvent, water and at least one metal alkoxide compound selected from among a zirconium tetraalkoxide of formula III (wherein R<sup>3</sup> is R<sup>1</sup>), a titanium tetraalkoxide of formula IV (wherein R<sup>4</sup> is R<sup>1</sup>) and an aluminum

trialkoxide of formula V (wherein R<sup>5</sup> is R<sup>1</sup>).

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**C08J 7/00**

**C08J 7/04**

**C08J 7/18**

(21) Application number: **06104470**

(22) Date of filing: **19.04.94**

(71) Applicant: **IWASAKI ELECTRIC CO LTD**

(72) Inventor: **FUKUDA MIKIKO**  
**KINOSHITA SHINOBU**

**(54) METHOD FOR MAKING PLASTIC PRODUCT  
ANTISTATIC**

**(57) Abstract:**

**PURPOSE:** To form, on the surface of a plastic product, a hard coating layer which has enough antistatic properties and does not exhibit much decrease in antistatic effects, even after washing by coating the surface with a soln. contg. an aminosilane compd. and an org. silane compd. and exposing the surface to electron beams.

**CONSTITUTION:** The surface of a plastic product is

coated with a soln. prep'd. by adding an org. silane compd. to a vinyl-terminated aminosilane compd. or a vinyl-terminated quaternary-ammonium silane compd. and is exposed to electron beams, thus making the product antistatic. The exposure causes the formation of free radicals, causing cross-linking between the molecules of the aminosilane or quaternary-ammonium silane compd. and the org. silane compd. to form a polymer and simultaneously causing grafting of the formed polymer onto the resin of the product.

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**C09K 3/16**

**H05F 1/02**

(21) Application number: 11375967

(71) Applicant: MATSUMOTO SEIYAKU KOGYO KK

(22) Date of filing: 29.11.99

(72) Inventor: HASHIMOTO TAKAHARU,  
SUZUKI HIROSHI  
BAN KENZOU

**(54) ANTISTATIC PROCESS**

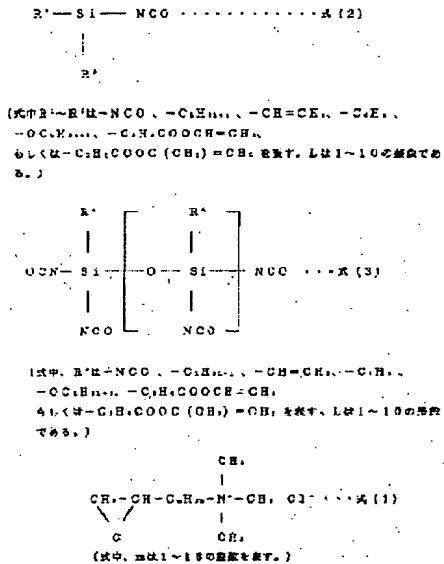
the process has a wide application range.

**(57) Abstract:**

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**PROBLEM TO BE SOLVED:** To provide an antistatic process having a wide range of application.

**SOLUTION:** In this antistatic process, a substrate is treated with a surface modifier containing a reaction product of a quaternary ammonium salt of formula (1) and an organic acid and a silyl isocyanate compound of formula (2) and/or (3) having a silica element and one or more isocyanate groups to form an antistatic film having an excellent adhesion, durability and light transmittance. The antistatic effect is imparted not only to the antistatic treated surface of a substrate but also to the rear side of the substrate or the surface of a film layer, a coating layer, a printed layer or an insulating layer such as a coated layer, which is laminated or formed on the antistatic-treated surface and inhibits the static build-up phenomena on such surfaces. Therefore,



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C08F 2/46

C08F290/06

C08J 7/04

C09D 5/00

// C08L101:00

(21) Application number: 11278380

(71) Applicant: MITSUBISHI CHEMICALS CORP

(22) Date of filing: 30.09.99

(72) Inventor: TERAUCHI MAKOTO  
HOSOKAWA NORITAKA  
HAYAMA KAZUHIDE

(54) ACTIVE ENERGY RAY-CURABLE COATING  
COMPOSITION

(57) Abstract:

PROBLEM TO BE SOLVED: To provide an active energy ray-curable coating composition which can form a coating film having a good marker pen (felt-tipped pen) ink-repelling property, a good ink-wiping property, its good durability, and a good property for the adhesion prevention and removal of finger print stains.

SOLUTION: This active energy ray-curable coating composition comprises a polymer (component A) which has quaternary ammonium salt groups, at least either of acryloyl groups or methacryloyl

groups, and organopolysiloxane units bound to a main chain through nitrogen atoms, and further has at least one kind of ions selected from the group consisting of aromatic sulfonate ions, aliphatic sulfonate ions and alkylsulfate ions as the counter ions of the quaternary ammonium salt groups or has alkoxycarbonylalkyl groups or aralkyl groups as the substituents of the quaternary ammonium salt groups, and a multi-functional (meth)acrylate (component B) having three or more (meth) acryloyl groups in the molecule. Therein, the component A/B content weight ratio is 1/90 to 40/60, and a coating film obtained by curing the composition has a water contact angle of  $\geq 100$  degree.

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**C08F 2/46**

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**C08F290/06**

**C09D 5/00**

**C09D 7/12**

**C09D133/06**

**C09D183/08**

(21) Application number: 11276088

(22) Date of filing: 29.09.99

(71) Applicant: MITSUBISHI CHEMICALS CORP

(72) Inventor: TERAUCHI MAKOTO  
HOSOKAWA NORITAKA  
HAYAMA KAZUHIDE

**(54) ACTIVE ENERGY RAY-CURABLE COATING  
COMPOSITION**

**(57) Abstract:**

**PROBLEM TO BE SOLVED:** To provide an active energy ray-curable coating composition which can form a coating film having an excellent marker pen (felt-tipped pen) ink-repelling property, an excellent ink-wiping property and its excellent durability.

**SOLUTION:** This active energy ray-curable coating composition comprises a polymer (component A) having quaternary ammonium salt groups, at least either of acryloyl groups or methacryloyl groups [integally described as '(meth) acryloyl group'], and organopolysiloxane units bound to a main chain

through nitrogen atoms, a polymer (component B) having organopolysiloxane units bound to the main chain without mediating the (meth)acryl group and the nitrogen atom, and a multi-functional (meth)acrylate (component C) having totally three or more (meth)acryloyl groups in the molecule. Therein, the (component A/component B) content weight ratio is 20/80 to 99/1, and when the total amount of the components A, B and C is 100 pts.wt., the total content of the components A and B is 1 to 40 pts.wt., and the content of the component C is 60 to 9 pts.wt. A coating film obtained by curing the composition has a water contact angle of  $\geq 100$  degree.

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**C08J 7/04**

**C09D 5/00**

**C09D183/04**

**C09D187/00**

**C09J 7/02**

(21) Application number: 11139996

(71) Applicant: MITSUBISHI CHEMICALS CORP

(22) Date of filing: 20.05.99

(72) Inventor: TERAUCHI MAKOTO  
HOSOKAWA NORITAKA  
HAYAMA KAZUHIDE

(30) Priority: 26.06.98 JP 10180874

**(54) ACTIVE ENERGY RAY CURABLE COATING  
COMPOSITION**

**(57) Abstract:**

**PROBLEM TO BE SOLVED:** To provide an active energy ray curable coating composition having excellent abrasion resistance, antistatic properties, peelability and stain resistance and capable of giving high transparency coated films.

composition comprises (A) a polymer having a quaternary ammonium salt group, at least one of an acryloyl group and a methacryloyl group, and an organopolysiloxane unit which links with the main chain through a nitrogen atom and (B) a polyfunctional (meth)acrylate having at least three in total of an acryloyl group and a methacryloyl group in the molecule.

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**SOLUTION:** An active energy ray curable coating